

Amendments to the Claims

1. (Currently Amended) An atomic layer deposition method of forming a silicon ~~dioxide-comprising~~ dioxide-comprising layer on a substrate, comprising:

~~positioning~~ providing a substrate within a deposition chamber;

flowing trimethylsilane to the chamber and flowing a first inert gas to the chamber under conditions effective to chemisorb a first species monolayer comprising silicon onto the substrate, the first inert ~~gas-flowing~~ gas-flowing being at a first rate;

after forming the first species monolayer, flowing an oxidant to the chamber and flowing a second inert gas to the chamber under conditions effective to react the oxidant with the chemisorbed first species and form a monolayer comprising silicon dioxide on the substrate; the second inert ~~gas-flowing~~ gas-flowing being at a second rate which is less than the first rate; and

successively repeating said a) trimethylsilane and first inert ~~gas-flowing~~ gas-flowing and b) oxidant and second inert ~~gas-flowing~~ gas-flowing effective to form a silicon ~~dioxide-comprising~~ dioxide-comprising layer on the substrate.

2. (Currently Amended) The method of claim 1 ~~wherein second~~ wherein the second rate is no more than 50% of the first rate.

3. (Currently Amended) The method of claim 1 ~~wherein second~~
wherein the second rate is no more than 40% of the first rate.

4. (Currently Amended) The method of claim 1 ~~wherein second~~
wherein the second rate is from 25% to 50% of the first rate.

5. (Currently Amended) The method of claim 1 ~~wherein second~~
wherein the second rate is from 25% to 40% of the first rate.

6. (Currently Amended) The method of claim 1 ~~wherein second~~
wherein the second rate is from 30% to 40% of the first rate.

7. (Currently Amended) The method of claim 1 ~~wherein second~~
wherein the second rate is from 35% to 40% of the first rate.

8. (Original) The method of claim 1 wherein the first and second
inert gases are the same.

9. (Original) The method of claim 1 wherein the first and second
inert gases are the different.

10. (Currently Amended) The method of claim 1 wherein each of the silicon ~~dioxide-comprising~~ dioxide-comprising monolayers is formed to an average thickness of at least 2 Angstroms.

11. (Currently Amended) The method of claim 1 wherein each of the silicon ~~dioxide-comprising~~ dioxide-comprising monolayers is formed to an average thickness of at least 3 Angstroms.

12. (Original) The method of claim 1 wherein the oxidant is flowed to the reactor at a rate of at least 2000 sccm.

13. (Original) The method of claim 1 wherein the oxidant is flowed to the reactor at a rate of at least 3000 sccm.

14. (Original) The method of claim 1 wherein the oxidant is flowed to the reactor at a rate of at least 4000 sccm.

15. (Original) The method of claim 1 wherein the oxidant is flowed to the reactor at a rate of at least 5000 sccm.

16. (Currently Amended) The method of claim 1 wherein the ~~oxidant-flowing~~ oxidant-flowing is void of plasma within the chamber.

17. (Currently Amended) The method of claim 1 ~~wherein second~~
wherein the second rate is from 35% to 40% of the first rate, each of the
silicon ~~dioxide-comprising~~ dioxide-comprising monolayers is formed to an
average thickness of at least 3 Angstroms, and the oxidant is flowed to the
reactor at a rate of at least 2000 sccm.

18. (Currently Amended) The method of claim 1 wherein said
~~trimethylsilane-flowing~~ trimethylsilane-flowing is for a first time period and
said ~~oxidant-flowing~~ oxidant-flowing is for a second time period, the second
time period being longer than the first time period.

19. (Original) The method of claim 18 wherein the second time
period is at least twice as long as the first time period.

20. (Original) The method of claim 18 wherein the second time
period is more than 2.5 seconds, and the first time period is no greater
than 2.5 seconds.

21. (Currently Amended) An atomic layer deposition method of forming a silicon ~~dioxide-comprising~~ dioxide-comprising layer on a substrate, comprising:

~~positioning~~ providing a substrate within a deposition chamber;

(a) flowing trimethylsilane to the chamber and flowing inert gas to the chamber under conditions effective to chemisorb a first species monolayer comprising silicon onto the substrate, the inert ~~gas-flowing~~ gas-flowing being at a first rate;

(b) after forming the first species monolayer, ceasing flow of the trimethylsilane to the chamber while flowing the inert gas to the chamber effective to purge trimethylsilane from the chamber;

(c) after purging the trimethylsilane from the chamber, flowing an oxidant and flowing the inert gas to the chamber under conditions effective to react the oxidant with the chemisorbed first species and form a monolayer comprising silicon dioxide on the substrate; the inert ~~gas-flowing~~ gas-flowing during the ~~oxidant-flowing~~ oxidant-flowing being at a second rate which is less than the first rate;

(d) after forming the silicon ~~dioxide-comprising~~ dioxide-comprising monolayer, ceasing flow of the oxidant to the chamber while flowing the inert gas to the chamber effective to purge oxidant from the chamber; and

successively repeating said (a)-(d) flowings effective to form a silicon ~~dioxide-comprising~~ dioxide-comprising layer on the substrate.

22. (Currently Amended) The method of claim 21 wherein the inert ~~gas flowing~~ gas-flowing while purging trimethylsilane is at the first rate.

23. (Currently Amended) The method of claim 21 wherein the inert ~~gas flowing~~ gas-flowing while purging oxidant is at the first rate.

24. (Currently Amended) The method of claim 21 wherein the inert ~~gas flowing~~ gas-flowing while purging trimethylsilane is at the first rate, and the inert ~~gas flowing~~ gas-flowing while purging oxidant is at the first rate.

25. (Currently Amended) The method of claim 21 wherein each of the silicon ~~dioxide-comprising~~ dioxide-comprising monolayers is formed to an average thickness of at least 2 Angstroms.

26. (Currently Amended) The method of claim 21 wherein each of the silicon ~~dioxide-comprising~~ dioxide-comprising monolayers is formed to an average thickness of at least 3 Angstroms.

27. (Currently Amended) The method of claim 21 ~~wherein second~~ wherein the second rate is no more than 50% of the first rate.

28. (Currently Amended) The method of claim 21 ~~wherein second~~ wherein the second rate is no more than 40% of the first rate.

29. (Currently Amended) The method of claim 21 ~~wherein second~~
wherein the second rate is from 25% to 40% of the first rate.

30. (Currently Amended) The method of claim 21 ~~wherein second~~
wherein the second rate is from 30% to 40% of the first rate.

31. (Currently Amended) The method of claim 21 ~~wherein second~~
wherein the second rate is from 35% to 40% of the first rate.

32. (Original) The method of claim 21 wherein the oxidant is
flowed to the reactor at a rate of at least 2000 sccm.

33. (Currently Amended) The method of claim 21 ~~wherein second~~
wherein the second rate is from 35% to 40% of the first rate, each of the
silicon ~~dioxide-comprising~~ dioxide-comprising monolayers is formed to an
average thickness of at least 3 Angstroms, and the oxidant is flowed to the
reactor at a rate of at least 2000 sccm.

34. (Currently Amended) The method of claim 21 wherein the
~~oxidant flowing~~ oxidant-flowing is void of plasma within the chamber.

35. (Original) The method of claim 21 wherein the (a) flowing is for a first time period and the (c) flowing is for a second time period, the second time period being longer than the first time period.

36. (Original) The method of claim 35 wherein the second time period is at least twice as long as the first time period.

37. (Original) The method of claim 35 wherein the second time period is more than 2.5 seconds, and the first time period is no greater than 2.5 seconds.

38. (Currently Amended) An atomic layer deposition method of forming a silicon ~~dioxide-comprising~~ dioxide-comprising layer on a substrate, comprising:

~~positioning~~ providing a substrate within a deposition chamber;

flowing trimethylsilane to the chamber under conditions effective to chemisorb a first species monolayer comprising silicon onto the substrate;

after forming the first species monolayer, flowing an oxidant to the chamber under conditions effective to react the oxidant with the chemisorbed first species and form a monolayer comprising silicon dioxide on the substrate; the oxidant being flowed to the chamber at a flow rate of at least 2000 sccm; and

successively repeating said trimethylsilane and ~~oxidant-flowings~~ oxidant-flowings effective to form a silicon ~~dioxide-comprising~~ dioxide-comprising layer on the substrate.

39. (Original) The method of claim 38 wherein the oxidant flow rate to the chamber is at least 3000 sccm.

40. (Original) The method of claim 38 wherein the oxidant flow rate to the chamber is at least 4000 sccm.

41. (Original) The method of claim 38 wherein the oxidant flow rate to the chamber is at least 5000 sccm.

42. (Original) The method of claim 38 wherein the oxidant is a mixture of O₃ and O₂.

43. (Currently Amended) The method of claim 38 wherein the ~~oxidant-flowing~~ oxidant-flowing is void of plasma within the chamber.

44. (Original) The method of claim 38 wherein the oxidant is a mixture of O₃ and O₂, and is void of plasma within the chamber.

45. (Currently Amended) The method of claim 38 wherein each of the silicon ~~dioxide-comprising~~ dioxide-comprising monolayers is formed to an average thickness of at least 2 Angstroms.

46. (Currently Amended) The method of claim 38 wherein each of the silicon ~~dioxide-comprising~~ dioxide-comprising monolayers is formed to an average thickness of at least 3 Angstroms.

47. (Currently Amended) The method of claim 38 wherein said ~~trimethylsilane-flowing~~ trimethylsilane-flowing is for a first time period and said ~~oxidant-flowing~~ oxidant-flowing is for a second time period, the second time period being longer than the first time period.

48. (Original) The method of claim 47 wherein the second time period is at least twice as long as the first time period.

49. (Original) The method of claim 47 wherein the second time period is more than 2.5 seconds, and the first time period is no greater than 2.5 seconds.